3rd. That when the influence of the brain is cut off, the secretion of urine ceases, and the production of animal heat is discontinued, even though the blood is preserved of its florid red colour.

4th. That, on the contrary, the coldness of the air applied is communicated to the blood, and thereby diffused to distant parts of the body.

On the Expansion of any Functions of Multinomials. *By* Thomas Knight, *Esq.* *Communicated by* Humphry Davy, *Esq. LL.D. Sec. R.S.* Read June 7, 1810. [*Phil. Trans.* 1811, *p.* 49.]

As M. Arbogast is the only author who has cultivated this part of analysis with any great success, it appeared desirable to the author to take a different view of the same subject, in order to confirm Arbogast's results by a different mode of obtaining them.

His own method has also the further advantage of arriving at several new and remarkable theorems (particularly with respect to inverse derivation), which probably could not be found by the method of M. Arbogast.

As far as concerns the functions of a single multinomial, the rules are the same as those of Arbogast; but in the more difficult cases of double and triple multinomials and functions of any number of them, the methods of the author are professed to be new and expeditious; and they are demonstrated with a great degree of facility and simplicity, from the analogy which reigns throughout his manner of treating the subject, and which enables the reader more readily to retain the rules in his memory.

On a Case of nervous Affection cured by Pressure of the Carotids; with some physiological Remarks. *By* C. H. Parry, *M.D. F.R.S.* Read December 20, 1810. [*Phil. Trans.* 1811, *p.* 89.]

In the year 1788 Dr. Parry published, in the Memoirs of the Medical Society of London, an account of many symptoms, such as headache, vertigo, mania, dyspnœa, convulsions, and others usually denominated nervous, that had been removed by pressure on the carotid arteries, which the author conceives to have operated by diminishing a too violent impulse of blood into the vessels of the brain, and thereby obviating excessive irritation.

From various cases which have occurred to Dr. Parry since that period, he selects one which appears to him to afford a singular illustration of the principle. It is that of a lady, who, after having been exposed to severe cold for some time, was seized with numbness of the left side, succeeded by tingling of the left hand, and deafness of the left ear, succeeded by excessive sensibility to sound. These were followed by a feeling of contraction or stiffness of various muscles of that side, and subsequently flutterings and twitchings of the flexor muscles of the fore-arm and of the deltoid; not, however, so as to

move her arm or hand. The rate of these vibrations was usually about 80 in a minute; but were much increased from any slight cause of general irritation.

Upon examination of the carotids, they seemed to be somewhat dilated, for about half an inch in length; but in other parts they were not larger than natural. The involuntary motions, which in this lady were confined to the left side, were not in any degree affected by pressure of the carotids on that side; but when the right carotid was strongly compressed, all the vibrations were uniformly stopped; which, says the author, hardly could occur but from removal of undue pressure of the brain, and consequent excessive irritation.

On the Non-existence of Sugar in the Blood of Persons labouring under Diabetes Mellitus. In a Letter to Alexander Marcet, *M.D. F.R.S. from* William Hyde Wollaston, *M.D. Sec. R.S.* Read January 24, 1811. [*Phil. Trans.* 1811, *p.* 96.]

Dr. Marcet, having been requested by Dr. Wollaston to examine whether the serous fluid, secreted in consequence of the application of a blister, could be impregnated with prussiate of potash, gave to a young woman five grains of this prussiate, every hour, till she had taken thirteen or fourteen such doses. After the fifth dose, when her urine became blue immediately by addition of sulphate of iron, a blister was applied, and the serum secreted in consequence was collected, whilst her urine still indicated the presence of the prussiate. But in this serum no prussiate could be detected.

Dr. Marcet also repeated Dr. Wollaston's experiment on serum derived directly from the blood, but with this variation, that the blood was drawn by cupping; and he could not discover the presence of any prussiate.

The author observes, that in several instances in which prussiate of potash had been taken by other persons, it could not be detected in their urine. As some of those in whom it failed to appear were taking mercury at the time, he conjectured that the difference might possibly arise from that cause; but as in two other failures no mercury was present, he does not lay much stress on that conjecture.

Reply of Dr. Marcet *on the same Subject.*

This letter contains the details of experiments made several years since.

First. On the serum of blood, with a view to discover some easy means of detecting the presence of sugar added to it.

Secondly. Upon the blood of persons whose urine was known to contain sugar, for the purpose of determining whether it was also present in their blood.

Thirdly. Upon the blood of persons secreting, by urine, other ingredients, which had been swallowed for that purpose, in order to ascer-